

**Remarks**

Applicants respectfully request reconsideration of the subject application.

Applicants have cancelled claims 1-20, and added new claims 22-28.

**Claim 21**

The Office action has applied Hirota et al. (US 5,201,802) to claim 21. However, Applicants respectfully submit that, as outlined below, the assertions made in the action are inaccurate, and in fact not a single element of claim 21 is disclosed in Hirota et al.

**Step (a)**

Regarding step (a) of claim 21, the action asserts that Hirota et al. show:

(a) identifying catalyst light-off by detecting production of an exothermic reaction across the catalyst when a temperature difference ( $\Delta t$ ) across the catalyst exceeds a threshold value ( $\Delta T_i$ ) (steps 608 and 610);

However, Applicants have reviewed steps 608 and 610, and can find no mention of identification of catalyst light-off. Hirota et al. does measure a temperature difference ( $t$ ) and compare this to a reference difference ( $\Delta T_i$ ); however, Hirota et al. makes this comparison to calculate a degradation function ( $D$ ), not to identify catalyst light-off. As such, the claimed feature is not shown.

**Step (b)**

Regarding step (b) of claim 21, the action asserts that Hirota et al. show:

(b) determining a light-off temperature ( $T_i$ ) of the catalyst by measuring the temperature at which the exothermic reaction is detected (step 614, Figure 17);

Again, Applicants have reviewed step 614 and Figure 17, yet can find no mention of determining a light-off temperature by measuring the temperature at which the exothermic reaction is detected. Thus, even assuming steps 608 and 610 of Hirota et al. somehow identify catalyst light-off, there is absolutely no mention that the temperature measured at detection of the reaction is itself determined to be the light-off temperature. Rather, in step 614, Hirota et al. determine a desired temperature range ("object temperature range," T1-T2) for controlling temperature of the catalyst. See Col. 9, lines 42-55. Thus, not only is there no measured temperature, but the temperatures (T1 and T2) of step 614 are in no way a measured temperature at which the exothermic reaction was detected.

It should be noted that even the Examiner admits that these temperatures (T1 and T2) are desired temperatures, not measured temperatures. For example, the Examiner admits on page 6 of the action that:

(Hirota et al. determine in advance a desired lower limit catalyst inlet temperature T1 and a desired upper limit catalyst outlet temperature T2 for the optimum reduction of NOx as a function of the degradation extent DR (Figure 17).

Thus, there should be no dispute that Hirota et al. could not possibly disclose step (b) of claim 21.

Steps (c and d)

Regarding steps (c) and (d) of claim 21, since Hirota et al. do not detect a light-off temperature (see above regarding step (b)), then it cannot obtain a measure of catalyst aging based on such a temperature. Rather, as noted above, Hirota et al. determine degradation extent (DR) based on the difference between the measure temperature difference (t) and a reference difference ( $\Delta T_i$ ), thought the degradation function (D). Further, since Hirota et al. do not

obtain a measure of catalyst aging based on a detected a light-off temperature, then it cannot adjust hydrocarbon injection based on such a measure.

As such, Applicants respectfully submit that claim 21 is in condition for allowance. Similar arguments apply to Claim 25, and thus it should also be allowed.

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I hereby certify that this correspondence is being sent via facsimile to the U.S. Patent and Trademark Office via facsimile at (703) 872-9306 on March 23, 2005.

  
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Respectfully submitted,

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